

CARDINALIS BONAPARTE, 1838 (AVES); PROPOSED VALIDATION
UNDER THE PLENARY POWERS. Z.N.(S.) 1608

By Ernst Mayr (*Museum of Comparative Zoology, Cambridge 38, Mass., U.S.A.*),
J. T. Marshall, Jr. (*University of Arizona, Tucson, Arizona*) and Robert K.
Selander (*University of Texas, Austin, Texas, U.S.A.*)

The name "cardinals" is applied to a group of genera of finches, which were raised to subfamily status by Sushkin (1925, *Auk*. 42 : 260) under the name Cardinalinae. Subsequent researches by Beecher (1953, *Auk*. 70 : 270-333) and by Tordoff (1954, *Auk*. 71 : 273-284) have confirmed the distinctness of this group; it is an important subfamily of birds to which also belong such well known genera as *Pheucticus*, *Guiraca*, and *Passerina*.

A problem has arisen as to the correct name of the type genus of this important subfamily. Since reference to this genus in the ornithological literature is made hundreds of times annually, the Commission is asked for a decision that will restore uniformity and universality in the use of this important name.

1. The type genus of this subfamily, formerly long known under the name *Cardinalis*, is based on *Loxia cardinalis* Linnaeus, 1758, an American bird well known under the vernacular name Cardinal. The names *Richmondia* and *Pyrhuloxia* have prevailingly been used for this genus in recent years.

The history of these names is as follows:

2. Brisson (1760, 3 : 42) was apparently the first to use the name *Cardinalis*. The first species listed by him under this heading, "Le Cardinal," is the Scarlet Tanager of northeastern North America, now known as *Piranga olivacea* Gmelin 1789, a member of the family Thraupidae (Tanagridae) or Tanagers.

The name *Cardinalis* in the sense of Brisson has apparently never been used by a subsequent author except possibly by Jarocki (see below). It is not included as the name of a genus in the index of the work of Brisson (*ibid.*, p. 1112), and *Cardinalis* Brisson has recently been rejected by action of the International Commission (Direction 105).

3. Jarocki (1821, *Zoologia* 2 : 133) published (in Polish) a list of genera of birds, in which he assigns the Scarlet Tanager of northeastern North America to the genus *Cardinalis*, apparently on the authority of Brisson. This name *Cardinalis* (as credited to Jarocki), was a dead-born synonym of *Piranga* Vieillot 1807 (Type, *Fringilla rubra* L. 1758) at the time of its publication. It was never used by a subsequent author as a generic name for a tanager and was apparently not even cited in synonymy of *Piranga* during the next 97 years.

The Jarocki publication seems to be exceedingly rare. We have been unable to trace a single copy in the United States and the volume is not even in the library of the British Museum.

4. Bonaparte (1838, *Proc. zool. Soc. London* (1837, : 111) was the first to use the generic name *Cardinalis* for the American bird well known by the vernacular name "Cardinal," originally described as *Loxia cardinalis* Linnaeus 1758 (*Syst. Nat.* (ed. 10) 1 : 172), based on the pre-Linnaean name *Coccothraustes rubra* of Catesby.

5. The generic name *Cardinalis* Bonaparte was used in this sense for 80 years. It appears in all standard ornithological works of that period in America as well as Europe, such as Baird, 1858, *Birds of North America* : 509; Coues, 1872, *Key to North American Birds* : 151; Baird, Brewer and Ridgway, 1874, *History North American Birds* 2 : 100; Salvin and Godman, 1884, *Biologia Centrali Americana*, Aves : 340; Sharpe, 1888, *Catalogue of Birds in the British Museum* 12 : 160; Ridgway, 1901, *Birds North and Middle America*, Bull. U.S. Nat. Mus. 50 (1) : 674.

6. In 1918 Mathews and Iredale (*Austral. Avian Rec.* 3 : 144) called attention to the earlier name *Cardinalis* of Jarocki (1821). Instead of requesting the International Commission to apply its plenary powers, sanctioned in 1913 by the Monaco Congress, to suppress the long forgotten and dead-born name *Cardinalis* Jarocki, Mathews and Iredale suppressed *Cardinalis* Bonaparte 1838 as a homonym of *Cardinalis* Jarocki 1821 and proposed a substitute name *Richmondena* for the North American Cardinal (= *Cardinalis* Bonaparte).

7. The name *Richmondena* has been widely adopted since the 1920's and has been used, until recently, almost universally in the American ornithological literature. It was adopted in the last two editions (1931, 1957) of the *Check-List of the American Ornithologists' Union*; by Hellmayr in his *Catalogue of the Birds of the Americas*, part XI (1938), *Field Mus. Nat. Hist.*, Zool. Ser. 13 : 67; by Pinto, 1944, in the *Cat. Av. Bras.* (2) : 588, and by the *Zool. Record*.

8. Regrettable though the change from the previously used name *Cardinalis* to *Richmondena* was in the beginning (and *Cardinalis* is still used by many non-American ornithologists), the name *Richmondena* has been used so widely in the last three decades that it would seem legitimate to consider it firmly established by usage. However, it now appears that the genus is threatened by still another name change, which is the reason for the present application.

9. It has become apparent in recent years that the Mexican Cardinal or Pyrrhuloxia, described by Bonaparte in 1838 as *Cardinalis sinuatus* (*Proc. zool. Soc., London*, 1837 : 111) is not separable generically from the North American Cardinal, "*Richmondena* " *cardinalis*. The genus *Pyrrhuloxia* created by Bonaparte in 1851 (*Consp. Gen. Av.*, 1 (2) (1850) : 500) for *Cardinalis sinuatus* has 68 years of priority over *Richmondena*.

10. Mayr and Amadon in 1951 (*Amer. Mus. Novit.*, No. 1476 : 27), accepting the congeneric status of *Loxia cardinalis* Linnaeus and *Cardinalis sinuatus* Bonaparte, adopted the name *Pyrrhuloxiinae* for the subfamily of cardinals, based on the oldest valid name of the type genus of Sushkin's *Cardinalinae*, in line with the provisions of Article 5 of the International Code, as valid in 1951, but in conflict with Article 40 of the new Code (1961).

11. As a consequence of the developments stated under (6-10) there is now lack of universality in the name used by authors for this genus. The American literature of the period 1930-1960 employs *Richmondena* almost universally, the classical literature and some recent authors use *Cardinalis*, while some students (indeed an increasing number of them) use *Pyrrhuloxia*, for the zoological reasons set forth in the Appendix. The eventual abandonment of the name *Richmondena* for the stated zoological reasons appears probable.

12. It would appear advisable to use the new period of instability as an

opportunity to return to the well known name *Cardinalis*, rather than to shift to the little known name *Pyrhuloxia*. As the most satisfactory method to restore stability and universality it is herewith proposed to suppress the name *Cardinalis* Jarocki and place *Cardinalis* Bonaparte 1838 on the Official List of Generic Names in Zoology.

13. Such action has several advantages.

- (a) It restores to the taxon the traditional scientific name *Cardinalis*, a name used throughout the classical literature and easily remembered, since it agrees with the vernacular name of the group. Thirteen of the 17 now recognized species and subspecies of this genus (*sensu lato*) were originally described under the name *Cardinalis*.
- (b) It avoids a possible incongruity between a subfamily name *Richmondinae* (if Article 40 is applied retroactively) and the name *Pyrhuloxia* of its type genus.
- (c) Since the name *Cardinalis* Bonaparte 1838 is older than either *Pyrhuloxia* 1850 or *Richmondina* 1918, its stability is not affected by the current zoological argument on the generic separability of the type species (*sinuatus* and *cardinalis*) of these two taxa.
- (d) The word *Pyrhuloxia* has become the vernacular name of a particular species, the *Pyrhuloxia* (= *sinuatus*). It would be confusing to call all cardinals *Pyrhuloxia*. The name *cardinalis* is also used for several Neotropical species, not only the North American cardinal.
- (e) *Cardinalis* is the name still used in part of the non-American literature and recommended with a 3 to 1 vote by the Standing Committee on Ornithological Nomenclature of the International Ornithological Congress (F. Salomonsen, Copenhagen; G. C. A. Junge, Leiden; E. Stresemann, Berlin; with A. H. Miller, Berkeley, dissenting) (1960, *Proc. XII Intern. Orn. Congress* 1: 35-37).

There is no danger of confusion since the name *Cardinalis* has not been used in the past 140 years for (and has never been the valid name of) any group of birds, except the cardinals. Nor will the restoration of the name *Cardinalis* be responsible for the abandonment of the now widely used name *Richmondina*, since the validity of this name is threatened for purely zoological reasons (as a subjective junior synonym of *Pyrhuloxia*).

14. It is evident from the past history of the names *Cardinalis* and *Richmondina*, and from the zoological disagreement as to the generic distinctness of *Richmondina* and *Pyrhuloxia*, that no nomenclatural solution can be found that will be equally acceptable to all ornithologists. Some ornithologists will be disappointed regardless of the decision that the International Commission will make. It is our belief, however, that the proposal here made will have the greatest potential, in the long run, to re-establish a stable nomenclature of the cardinals.

15. The International Commission on Zoological Nomenclature is therefore asked:

- (1) to use its plenary powers to suppress the generic name *Cardinalis* Jarocki 1821, for the purposes of both the Law of Priority and the Law of Homonymy;

- (2) to place the generic name *Cardinalis* Bonaparte, 1838 (gender: masculine), type-species, by designation by Gray, 1840, *Loxia cardinalis* Linnaeus, 1758, on the Official List of Generic Names in Zoology;
- (3) to place the generic name *Cardinalis* Jarocki, 1821 (as suppressed under the plenary powers in (1) above) on the Official Index of Rejected and Invalid Generic Names in Zoology;
- (4) to place the following specific names on the Official List of Specific Names in Zoology:
 - (a) *cardinalis* Linnaeus, 1758, as published in the binomen *Loxia cardinalis* (type-species of *Cardinalis* Bonaparte, 1838);
 - (b) *sinuatus* Bonaparte, 1838, as published in the binomen *Cardinalis sinuatus*;
- (5) to place the subfamily name CARDINALINAE Sushkin, 1925 (type-genus *Cardinalis* Bonaparte, 1838) on the Official List of Family-Group Names in Zoology.

APPENDIX

The separation of *Pyrrhuloxia* from *Cardinalis* Bonaparte (= *Richmondena* Mathews and Iredale) was based primarily on a difference in the shape of the bill of the two type species. In recent years, however, it has been realized how plastic a structure the bill is in birds. More and more cases are discovered of exceedingly closely related species which differ strikingly in the form of the bill. Differences in the bill are therefore not decisive as proof of generic distinctness unless supported by other more trenchant characters. The significance of the difference between the two species is further reduced by the fact that there is a third species (" *Cardinalis* " *phoeniceae*) in which bill and crest are intermediate between those of the species *cardinalis* and *sinuatus*.

There are no other significant differences between these type species of *Pyrrhuloxia* and *Richmondena*; indeed all recent studies indicate their extraordinary similarity. The most recent analysis of the biology of the two species (Gould, 1961, *Condor*, 63 : 246-256) comes to the conclusion that they are " basically very similar " in all aspects of their life history. " Their songs are homologous and at times they are indistinguishable. " " The nesting cycle and habits are almost identical. " " Differences in ecology which cause a different geographic distribution of the two species are not evident on the study area, where they both occur and utilize the same environment in the same way. " " The considerable similarity between the two species (*cardinalis* and *sinuatus*) in life history supports the hypothesis that they are congeneric. "

To separate a monotypic genus *Pyrrhuloxia* from a genus with two species (" *Richmondena* "), when all three species of this group are exceedingly similar, and one of the three species intermediate between the other two, is in clear conflict with the best principles of classification. An increasing number of recent authors have drawn the consequences from these findings and have combined *Pyrrhuloxia* and " *Richmondena*," (for instance, Brodkorb in the handbook: The Vertebrates of the United States, 1957, Blair *et al.*, p. 586).